WHAT IS CLAIMED IS:

1. A filter apparatus that filters a to-be-filtered fluid and removes foreign matter included in the to-be-filtered fluid, comprising:

a case;

to-be-filtered fluid intake means for causing the to-be-filtered fluid to flow into the case;

to-be-filtered fluid discharge means for discharging the to-be-filtered fluid from the case to the outside;

a filter, provided within the case, for capturing foreign matter by passing the to-be-filtered fluid through, while the to-be-filtered fluid flows in from the to-be-filtered fluid intake means and flows out from the to-be-filtered fluid discharge means;

cleaning means, provided within the case, for pressurizing the to-be-filtered fluid within the case, causing the to-be-filtered fluid to pass through the filter in a direction reverse to a direction in which the to-be-filtered fluid is filtered, and removing the foreign matter adhering to the filter;

pressure fluid intake means for making a pressure fluid act on the cleaning means, and causing the cleaning means to pressurize the to-be-filtered fluid within the case; and

pressure fluid discharge means for discharging the pressure fluid that is supplied from the pressure fluid

intake means to act on the cleaning means.

2. The filter apparatus according to claim 1, wherein the case is provided with drain discharge means for discharging to the outside of the case the to-be-filtered fluid containing the foreign matter removed from the filter, when the foreign matter adhering to the filter is removed by the cleaning means.

3. The filter apparatus according to claim 2, wherein the drain discharge means discharges the to-be-filtered fluid containing the foreign matter to the outside of the case in a state in which inflow of the to-be-filtered fluid from the to-be-filtered fluid intake means and outflow of the to-be-filtered fluid from the to-be-filtered fluid discharge means are prohibited.

4. The filter apparatus according to claim 1, wherein the filter has a cylindrical shape and is disposed to be concentric within the case, and

the to-be-filtered fluid is passed through a peripheral wall of the filter from an outer peripheral side to an inner peripheral side thereof and is thus filtered.

5. The filter apparatus according to claim 2, wherein the cleaning means includes a cylinder disposed within the filter to be concentric with the filter, and a piston movably provided within the cylinder and configured to receive a pressure of the pressure fluid

from the pressure fluid intake means and to thereby move within the cylinder, and

when the foreign matter adhering to the filter is to be removed, the piston is moved within the cylinder by the pressure fluid from the pressure fluid intake means, and the to-be-filtered fluid within the cylinder is caused to flow out under pressure.

6. The filter apparatus according to claim 2, wherein the cleaning means is a cleaning member formed of an expandible, contractible material in a bag-like shape, the cleaning means is provided within the filter, and the cleaning means expands when the pressure fluid is supplied from the pressure fluid intake means into the cleaning means, and pressurizes the to-be-filtered fluid remaining in the filter.

7. A filter apparatus that filters a to-be-filtered fluid and removes foreign matter included in the to-be-filtered fluid, comprising:

a base block having a plurality of pairs of inlet ports and outlet ports in an upper surface thereof;

a plurality of cases each having a cylindrical shape with a closed upper end face and an opened lower end face, one of said inlet ports and one of said outlet ports being opposed to the opened lower end face of the case, and the plurality of cases being fluid-tightly provided on the upper surface of the base block;

to-be-filtered fluid intake means, provided in the base block, for feeding a to-be-filtered fluid into each of the plurality of cases;

to-be-filtered fluid discharge means, provided in the base block, for discharging to the outside the to-be-filtered fluid fed into each of the plurality of cases;

a filter, provided within each of the cases, for capturing foreign matter by passing the to-be-filtered fluid through, while the to-be-filtered fluid flows in from the to-be-filtered fluid intake means and flows out from the to-be-filtered fluid discharge means;

cleaning means, provided within each of the cases, for pressurizing the to-be-filtered fluid within each case, causing the to-be-filtered fluid to pass through the filter in a direction reverse to a direction in which the to-be-filtered fluid is filtered, and removing the foreign matter adhering to the filter;

pressure fluid intake means for making a pressure fluid act on the cleaning means, and causing the cleaning means to pressurize the to-be-filtered fluid within the case; and

pressure fluid discharge means for discharging the pressure fluid that is supplied from the pressure fluid intake means to act on the cleaning means.

8. The filter apparatus according to claim 7, wherein the base block is provided with a pair of

cases,

the base block is provided with switch means for effecting switching between a first state in which the to-be-filtered fluid is fed to the pair of cases and filtered, and a second state in which the to-be-filtered fluid is fed to one of the pair of cases and filtered while foreign matter adhering to the filter in the other case is removed.

9. The filter apparatus according to claim 8, wherein the switch means is able to effect switching to a third state in which the to-be-filtered fluid is fed to one of the pair of cases and filtered while flow of the to-be-filtered fluid to the other case is stopped.

10. The filter apparatus according to claim 8, wherein the switch means comprises a switch valve chamber formed in the base block, a switch valve rotatably inserted in the switch valve chamber, and operation means for effecting switching between said first state and said second state by rotating the switch valve.

11. The filter apparatus according to claim 8, wherein the switch means includes drain discharge means for discharging the to-be-filtered fluid including foreign matter from the case to the outside, when foreign matter adhering to the filter in one of the cases is removed.

12. The filter apparatus according to claim 11,

wherein the switch means includes auxiliary intake means for causing, when foreign matter adhering to the filter in one of the cases is to be removed, part of the to-be-filtered fluid from the to-be-filtered fluid intake means to flow into the case.

13. The filter apparatus according to claim 7, wherein the cleaning means includes a cylinder disposed within the filter to be concentric with the filter, and a piston movably provided within the cylinder and configured to receive a pressure of the pressure fluid from the pressure fluid intake means, and

when the foreign matter adhering to the filter is to be removed, the piston is moved within the cylinder by the pressure fluid from the pressure fluid intake means, and the to-be-filtered fluid within the cylinder is caused to flow out under pressure.

14. The filter apparatus according to claim 13, wherein when the filter in one of the cases is to be cleaned by a switching operation of the switch means, the pressure fluid is fed from the pressure fluid intake means to the associated cleaning means in interlock with the switching operation of the switch means.

15. The filter apparatus according to claim 7, wherein the to-be-filtered fluid is a liquid, and the pressure fluid is a gas.